



# Comparison of Residential Construction Costs in Ireland to other European Countries

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**Contact Details**  
Housing Agency  
53 Mount Street Upper  
Dublin 2

01 656 4100  
info@housingagency.ie

For further information, please visit  
**[www.housingagency.ie](http://www.housingagency.ie)**

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# 01/ Executive summary

**This study was carried out to compare the construction costs of residential developments across a number of European countries with comparable economic and climatic conditions to Ireland. It is intended to complement a study of the construction costs of residential development in Ireland which has been carried out by the Department of Housing, Planning and Local Government. These two studies were carried out in the context of commitments under the *Rebuilding Ireland: Action Plan for Housing and Homelessness*.**



**T**he comparable countries included in the study are: United Kingdom (UK), Germany, the Netherlands, and France. The reasons these four countries were selected for inclusion in the comparative index is as follows:

- a) **They have broadly comparable climatic conditions to Ireland as mid/northern European countries (notwithstanding the south of France) and their building construction methodologies are broadly comparable also.**
- b) **They are economically comparable on a GDP/GNP per head of population basis to Ireland,**

**c) Their construction labour costs are broadly comparable to Ireland**

In order that this study be of most benefit, the focus was on comparison of base construction costs which was determined as being the cost of constructing dwellings from the ground floor slab up to and including the roof but excluding roads, drainage, substructures and other work which can vary greatly from scheme to scheme.

This study finds that Ireland has comparable construction costs for residential buildings with the UK, Germany and France. However, in the Netherlands, costs are of the order of 18% less than in Ireland and are also notably lower than in the UK, Germany and France. The information we have obtained from the Netherlands suggests that there are a number of factors which may play a part in achieving lower residential construction costs including the types of houses and apartments built; the level of control and intervention by municipalities; and the high proportion of residential developments undertaken by housing associations. We discuss some of these factors in Section 8 and 9.

It is important to acknowledge that it is difficult to get true cost comparisons between countries. This is due to the variety of approaches to undertaking residential development in each country and the local industry practices that exist. These include significantly different arrangements between the client, design teams and contractors; control and ownership of land between local government and the private sector; the level of intervention of local government in controlling development and providing infrastructure; and the relative levels of residential development undertaken by not-for-profit organisations such as housing associations or municipal housing companies.

The report includes two tabulated index comparisons between Irish construction costs and those in the UK, France, Germany and the Netherlands. The first Table A is based on a study of residential costs in the study countries. This index indicates Irish residential construction costs as generally comparable to those in the UK, France and Germany but higher than those in the Netherlands. The residential cost study is discussed in more detail in Section 8.

**Table A: Index of Residential Construction Cost (Q1 2017)**

Country	Residential Cost Index
UK	101.2
<b>Ireland</b>	<b>100.0</b>
France	98.7
Germany	97.1
Netherlands	82.0

The following cost items have been excluded from the residential construction cost data to establish a fair basis for comparison between residential construction costs in so far as possible:

- Site cost
- Professional design fees
- Local authority levies
- Finance costs
- Risk margin for a private developer
- Sales, marketing and legal costs
- VAT
- External and site development works
- Substructures including basements

The second table, table B, is based on construction costs of a standardised office block model prepared by the CEEC.

**Table B: Index of Construction Costs based on CEEC Office Cost Model (Q1 2017)**

Country	CEEC Office Cost Model
UK	105.1
France	101.4
<b>Ireland</b>	<b>100.0</b>
Germany	96.0
Netherlands	95.8

The index indicates that Irish office construction costs are generally comparable to those in the other study countries. The office block study is discussed in more detail in Section 7.

# 02/ Introduction

**One of the primary objectives under *Rebuilding Ireland* is the building of more homes. The plan set out the objective of benchmark housing delivery costs in Ireland. The Department of Housing, Planning and Local Government led a detailed study with industry participation to examining Irish residential construction costs entitles *Review of Delivery costs and Viability for Affordable Residential Developments*. In parallel, the Housing Agency undertook this complementary study to examine construction costs in Ireland compared to several European countries.**

**T**he purpose of this study is to obtain and examine construction cost data from various European Countries and prepare a report comparing this data with comparable construction cost data for Ireland. The study examines construction costs both within the general construction market and more particularly with respect to residential construction. This study examines the differences and similarities between Irish construction costs and those in other European countries and the factors affecting construction costs in each of the comparator countries. The main focus is to consider the construction costs of residential developments.

To fulfil its brief, the Agency commissioned Mulcahy McDonagh & Partners to lead the research and draft the report. The consultant with the firm who undertook the work had extensive experience in working with the CEEC (Conseil European des

Economistes de la Construction) (European Council of Construction Economists) including 10 years as a member of the CEEC board.

The task included a review of published data both at EU level (Eurostat <sup>1</sup>), CEEC <sup>2</sup> (Conseil European des Economistes de la Construction), CSO<sup>3</sup> (Central Statistics Office) (Ireland), SCSi <sup>4</sup>, BKI (Baukosteninformationszentrum <sup>5</sup> Germany), BCIS <sup>6</sup> (Building Cost Information Service UK) and UNTEC <sup>7</sup> (Union Nationale des Econmistes de la Construction France).

In addition, cost data was obtained from several comparable countries of interest, including data on specific residential developments. This data was analysed on a cost per square metre of floor area basis for both houses and apartments.

1. <http://ec.europa.eu/eurostat>
2. <https://www.ceecorg.eu/>
3. <http://www.cso.ie/en/index.html>
4. <https://www.scsi.ie/>
5. <http://www.bki.de/startseite.html>
6. <http://www.rics.org/ie/knowledge/bcis/>
7. <https://www.untec.com/>

# 03/ Defining construction costs

**In carrying out a study of this nature, it is important from the outset to define precisely what is meant by construction costs and how it is measured within the bounds of this study.**

**W**hilst the cost of building materials, labour and construction plant are significant components of construction cost, there are other factors to consider from the new building procurer's perspective such as the level of construction activity in the local market and the availability of contractors and skilled labour. Equally, there are cost elements which this study does not consider such as land purchase costs, the financial cost of developer loans, marketing and sales costs.

Construction costs in this study include the costs directly related to the physical process of constructing a new building known as Capital Construction Costs<sup>8</sup> It should be noted that, whilst professional design fees and VAT for residential construction are sometimes included in capital construction costs, the final analysis in this report is net of those items. Also, due to wide variation in the extent and scope of external works and substructures associated with the various projects reviewed, including basement car parks, it has been decided for the purposes of allowing a fair comparison, to exclude these costs from the final analysis. *Table 1* overleaf sets out what costs the study includes and excludes.

Construction costs, for the purposes of this study, are considered from the perspective of the party who is procuring the building. In commercial building or with a self-build house, the company or person commissioning the construction of a new building (normally referred to as the Client or the Employer) will have oversight of the different cost elements that make up the overall cost of the building. These costs include the cost of acquiring the site, fees for the building designers, local government charges, VAT, finance costs as well as the construction costs themselves. However, when a private individual is purchasing a new house from a property developer they do not get to see the different costs that are encapsulated within the purchase price they pay.

The data gathered for Sections 7 and 8 of this study is based on information provided in respect of new-build construction projects. That is the construction costs that a party commissioning an office building (Section 7) or new-build housing/apartment scheme (Section 8) would have to pay to a building contractor to have the building work carried out. This data as gathered included costs of site preparation, substructures and external works. However, as already noted, these costs are excluded from the final analysis to ensure, in so far as possible, that like is being compared with like.

8. As defined under ICMS International Construction Measurement Standards – see Appendix A

Table 1: Construction Costs

Included costs	Excluded costs
Building materials (bricks, concrete, timber, windows, roof tiles etc.) including built-in fittings e.g. kitchens, sanitary appliances and wardrobes	Site acquisition cost
Labour costs	Professional design fees, and other direct client paid consultants and supervisors
Cost of plant (JCBs, mixers etc.)	Local authority levies and works by Utilities paid direct by the Client
On-site overheads (supervisors, cabins, scaffolding, health and safety equipment etc.)	Finance costs and risk margin for a private developer
Off-site overheads (management and administration costs for the building contractor associated with the building project)	Sales, marketing and legal costs
Insurance for the building works <sup>9</sup>	VAT
Builders profit	Post completions furniture, furnishings and equipment
	Demolitions and site preparation
	Substructures including basement works
	External works (roads, paths, fencing etc.) including site Utilities (electricity, gas, water services etc.) and ancillary works

As European countries have different practices in how they categorise their construction costs, it was essential that a common construction cost reporting format be used by all contributing parties. To facilitate the gathering of data for the residential construction costs in Section 8, permission was obtained from the Coalition of the International Construction Measurement Standard to use their new International Construction Measurement Standard (ICMS) format for construction cost analysis in advance of its publication in July 2017. For the purposes of measuring floor areas in Section 8 the published rules of measurement for the International Property Measurement Standards (IPMS)<sup>10</sup> for Residential buildings IPMS 1 and IPMS 2 have been used. All construction costs have been analysed on the basis of cost per square metre of floor area which was calculated in accordance with IPMS rules.

It is to be noted that the ICMS is, in part, based on the European Code of Measure which is a cost reporting system devised and developed by the CEEC in 2003 to allow for international cost comparisons of building works. This same code is the basis for the CEEC's own publication of Office Costs used to compare direct construction costs between European Countries (see Section 7). Full details of the ICMS cost reporting process is set out in Appendix A of this report noting that this is not the final version. However, the final published changes to the ICMS document were not significant.

Information on Associated Capital Costs<sup>11</sup> have also been reviewed but, for reasons later explained, is excluded from the final analysis in Section 8.

9. In France insurance costs are excluded from the Capital Construction Costs and are paid direct by the Client.

10. For IPMS documents see <https://ipmsc.org/>

11. As defined under ICMS International Measurement Standards – see Appendix A



# 04/ Challenges to producing comparative costs

**The international construction market is a complex market due to national differences in methods of procurement, legal systems, building contracts, currency, availability of building materials and labour, taxation, definitions of building floor area, traditional local construction forms and differences in demand.**

**M**arket size varies from country to country with large countries like France and Germany having very large domestic construction markets which have the advantage of scale compared to smaller countries like Ireland.

In respect of residential projects, the approach of the State to procuring residential development differs from country to country and, therefore, the reported costs can also differ. For example, in both the Netherlands and Germany the local public municipalities often purchase land for development near cities and towns and invest in infrastructure for the lands with a view to selling on the developed sites to private developers or housing associations to build

on. The cost paid for the site, therefore, includes the cost of site infrastructure such as roads and drainage which is normally a separate cost in addition to the site cost in the UK, Ireland and many other countries.

Cultural and market norms also vary between countries, particularly with respect to housing. In Ireland and the UK, a new house or apartment is sold with all walls and joinery painted and with kitchen fittings, bathroom fittings and frequently with bedroom wardrobes. This is what the market has traditionally supplied with a new dwelling and it is consumer expectation for any new house or apartment. In some European countries, the market norm is that new houses and apartments are sold without kitchen and sanitary units in the case of

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12. Since the start of the Global economic recession in 2008 in the Netherlands some municipalities have found themselves with an oversupply of developed public land for residential use and consequently land prices have not always been sufficient to recover the outlay of costs to bring the site to market.

#### 04 Challenges to producing comparative costs /continued

France or without bedroom wardrobe units in the case of the Netherlands, with the new owner/ occupier of the dwelling purchasing and installing these separately.

All of these localised differences make it difficult to compare costs on a like for like basis. Even within national boundaries there are significant regional cost differences which are peculiar to location and the local economy. In Ireland and in the other countries included in this study, despite material costs and trade union labour rates being similar across each country, construction tender prices for the same design and specification can vary significantly depending on the geographical location. In respect to the countries sampled in this study, in the UK average construction costs in London are nearly double that of Northern Ireland according to the BCIS report. Similar disparities arise in Germany where Munich, can be some 50% more expensive to build residential developments in than Dusseldorf according to BKI data.

The overall effect of local and national variations means that a simple comparison of reported construction costs for typical houses, apartments or office buildings is not adequate to establish an accurate measure of real construction cost variation. Local and national variations, in so far as possible, need to be stripped out of construction cost data to determine a fair and accurate construction cost comparison. In our analysis under Section 9.0 we have endeavoured to establish national mean construction costs, where possible, to provide comparisons.



# 05/ Methodology adopted to compare construction costs

**This study, will examine available cost data from three sources to establish comparators and to establish conclusions from each set of data reviewed and received. The three sources used in this study are as follows:**

## **5.1 Published Indices**

This study examines published construction material price and labour price indices for residential building such as published by Eurostat from a number of European countries including Ireland. This data tracks prices paid by building contractors engaged in residential construction for materials, labour and other consumables in their national industries. As set out in Section 3, this study is principally concerned with the price paid by the building employer or client to the building contractor. Nevertheless, producer prices do influence consumer prices for residential construction but it is important to note that market activity, particularly market demand, can result in movements in consumer prices that may not be reflected in producer prices. In Section 6 we set out the Eurostat information together with CSO data to establish the usefulness of this data in this comparative study of Irish and European Construction costs.

## **5.2 CEEC Office Cost Data**

Actual procurement/tender costs paid to contractors are more reflective of the construction costs that clients or building consumers must pay. Beginning in 2010, the CEEC published a comparative cost study for a standardised commercial speculative office building based on the pricing of common pricing document which use actual measured a quantities and common specification descriptions prepared and agreed by cost consultants from nine European Countries. This pricing exercise demonstrates the relative construction costs between countries on a common baseline building and tracks the rising or lowering trends of those costs for each of the countries over time. The costs in the standard study include VAT and construction management costs and an agreed scope of substructure and external work. For the purposes of this study, CEEC members from the five countries, which have been selected for the residential comparative construction cost study, have agreed to provide an update of the Office Cost model data for their country based on Q1 2017. The full office cost model costs and the Q1 2017 are set out in Appendix B<sup>13</sup>.

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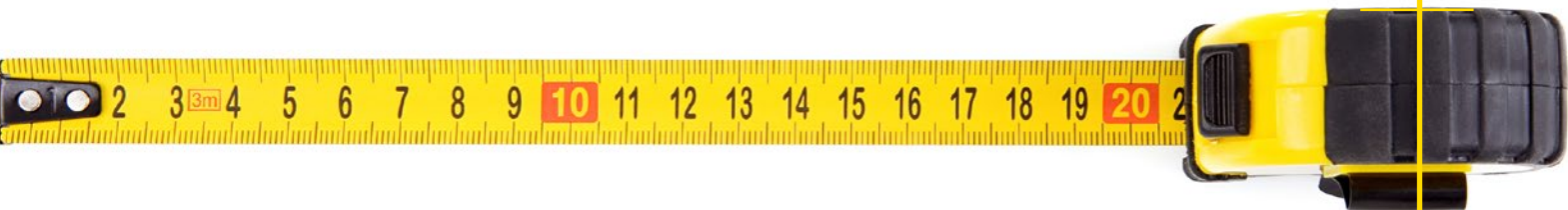
13. The CEEC is currently working on similar projects to develop cost models for apartments and other building types.

### 5.3 Market based Data

The third source for this study involves gathering construction costs data for recent relevant residential construction projects from the five selected European countries in a common ICMS reporting format. Several national industry sources through the CEEC provided the Housing Agency, on a confidential basis, with full construction cost information on residential construction projects based on the ICMS standard construction cost reporting format. Data was gathered from four comparative countries: the UK, France, Germany and the Netherlands. Data from these countries along with Irish data was ultimately used to develop a comparative index of residential construction costs which is set out in Section 9. The reasons these four countries were selected for inclusion in the comparative index are as follows:

- a) **They have broadly comparable climatic conditions to Ireland as mid/northern European countries (notwithstanding the south of France) and their building construction methodologies are broadly comparable also.**
- b) **They are economically comparable on a GDP/GNP per head of population basis to Ireland,**
- c) **Their construction labour costs are broadly comparable to Ireland**

Details of the documents used, parameter set etc. to gather the responses are included in Appendix C.



# 06/ Reference to published construction material price and labour price indices

**Eurostat publishes monthly, quarterly and annual statistics for construction cost related matters for 33 European countries including all EU members plus Norway, Switzerland, Montenegro, Macedonia and Turkey.**

**T**he published indices for construction cost for new residential buildings<sup>14</sup> includes materials, labour, plant, transport and energy costs. The measured data is only indicative of the relative movement of those costs within each state relative to a base 100 set for each country in 2010. So, for example, in respect to the five selected countries for this study the following changes are indicated between 2010 to 2016 (see *Table 2 overleaf*).

What this data shows is the rate of change in the measured cost indicators in each country. For

example, since 2010 residential building costs have risen in the UK by 16.8%, Germany by 10.5% and Netherlands by 9% and that France remains below the inflation trend at 3.9% for the period to 2016. The indicators for Ireland deviate most from the general trend starting with an initial drop of 2.2 points in 2011 and remaining below 100 until 2014. It is notable that, in the monthly index<sup>15</sup>, the Irish figure of 100.70 has not changed since Q4 2014. Overall the data indicates a total increase over the period of only 0.70% in Ireland, significantly below the rate of change in the other study countries.

14. Part of the dataset NACE Rev 2

15. [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sts\\_copi\\_m&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sts_copi_m&lang=en)

**Table 2: Extract from Eurostat Construction Cost of New Residential Buildings index**

Geo/Time	2010	2011	2012	2013	2014	2015	2016
European Union	100.00	103.00	104.70	105.30	106.20	106.90	107.90
UK	100.00	101.40	103.80	106.30	110.60	113.30	116.80
Germany	100.00	103.60	105.80	106.60	107.70	109.20	110.50
Netherlands	100.00	101.90	103.70	103.90	104.90	106.80	109.00
France	100.00	103.70	105.20	104.50	104.30	103.60	103.90
<b>Ireland</b>	<b>100.00</b>	<b>97.80</b>	<b>98.80</b>	<b>99.60</b>	<b>100.30</b>	<b>100.70</b>	<b>100.70</b>

**Table 3: Extracts from Eurostat labour cost index in construction, input prices for materials and an Output Price Indices (OPI)**

Geo/Time	2010 base	Labour 2016	Materials 2016	OPIs 2016
European Union	100.00	109.50	105.00	107.20
UK	100.00	No data	109.60	116.70
Germany	100.00	113.90	108.70	113.40
France	100.00	109.30	97.80	107.40
<b>Ireland</b>	<b>No data</b>	<b>No data</b>	<b>No data</b>	<b>100.70</b>
Netherlands	100.00	110.90	108.00	86.20

The Department publishes its own National House Construction cost indices<sup>16</sup> which indicates a drop of 2.7% in 2011 (208.70 to 203.10) and a rise of 5.1 percent to 208.20 to end of 2016. The difference in these two indices mainly relates to different measurement metrics (the Department's index only measures material and labour costs). However, it is important to note that the trends in both indices reflect the material, labour, plant and related costs that a building contractor must pay but do not reflect the market procurement costs of residential buildings.

Eurostat also produces similar individual indices for labour, materials and construction output with a 2010 base 100, an extract of which is set out in Table 3. Unfortunately, Ireland does not appear in either the labour or materials indices.

In the absence of Irish data on materials on Eurostat, we need to refer to the Irish CSO Wholesale Prices Monthly series for Building and Construction materials<sup>17</sup>. From M03 2010 to M03 2016 indicates a change from 98.60 to 109.00 or an increase of 10.55% over the period. When compared to Eurostat data this suggests that the Irish basket of construction materials as measured by the CSO has been moving upwards at least 1 to 2 percentage points ahead of the UK, Netherlands and Germany and significantly ahead of material price inflation in France. However, as it is not clear that the measurement methodology used by the CSO is directly comparable to Eurostat, these conclusions must be seen as provisional.

16. <http://www.housing.gov.ie/housing/private-rented-housing/house-building/national-house-construction-cost-index>

17. <http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=WPM18&PLanguage=0>

Eurostat also publish labour unit costs per hour for the construction sector and in 2016 it quotes the following in respect of our selected countries;

**Table 4: Extract from Construction labour costs – source Eurostat**

Country	€/hour
EU -28	€26.10
Netherlands	€33.70
France	€31.40
UK	€27.90
<b>Ireland</b>	<b>€27.10</b>
Germany	€27.10

Ireland is noted to be the same as Germany and slightly lower than the UK.

All the indices discussed above measure the costs to contractors of materials, labour, plant etc. However, none of these indices take account of local market factors. In particular, they do not fully take account of market demand for construction work which, when demand is low and contractors are competing to get the limited volume of work available, results in low market prices for construction work. Similarly, when demand is high and contractors and their supply chain of sub-contractors and suppliers are in high demand, market prices for construction work rises.

In conclusion, Eurostat indices offer only limited assistance in comparing construction costs across Europe. The indices do indicate construction cost trends within each country and, for example, indicate that UK construction costs rose at a more significant rate from 2010 than other European countries at nearly 17% to 2016. They do not allow a direct comparison between countries for the cost of constructing the same building.

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**“ Eurostat indices offer only limited assistance in comparing construction costs across Europe”**

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# 07/ Published European cost comparator (CEEC office cost model 2010 – 2017)

**The CEEC is a body representing several professional associations/institutions of construction economists/quantity surveyors from various European countries which was formed in 1977 and is comprised of full members representing over 150,000 practising professionals in the Czech Republic, Denmark, Finland, France, Ireland, the Netherlands, Spain, Switzerland, UK and associate members in Germany, Estonia, Hungary and Italy.**

In 2003 the CEEC developed a system for comparing construction costs called the Code of Measurement and formed a common cost measurement system for reporting construction costs. In 2010 the CEEC developed a project for comparing construction costs between member countries based on an actual three storey commercial

office building with drawings and specifications and with a common pricing document measured based on the Code of Measurement. Nine member countries have priced the common pricing document on an annual basis since 2010 and completed an elemental cost analysis based on current market rates for each trade and work in their own construction industry.



**Table 5: CEEC Office Cost Model Figures 2016 /2017**

Country	UK	France	Ireland	Germany	Netherlands
2016	€1,759 <sup>18</sup>	€1,533	<b>€ 1,461</b>	€1,445	€1,422
Index to Ireland	120.4	104.9	<b>100.0</b>	98.9	97.4
2017	€ 1,629 <sup>19</sup>	€1,571	<b>€1,550</b>	€1,487	€1,485
Index to Ireland	105.1	101.4	<b>100.0</b>	96.0	95.8

Details of the total results and the supporting documents are included at Appendix B. The results not only indicate the relationship between tendered costs between nine European Countries, but also the trending movement in these costs over time. The reported figures exclude VAT and professional design team fees and all other associated capital costs, and so are the contractor's price (the Capital Construction Cost net of VAT) to construct the office building based on an Employer designed contract.

For the purposes of this study delegates from the selected study countries have provided, in advance of the usual annual reporting date, figures for 2017 which are set out below along with 2016 figures.

The range of price deviation across the five study nations in 2017 is relatively narrow with the most expensive country (UK) being 9.7% more expensive than the least expensive (the Netherlands). Irish construction costs are roughly at the mid-point in the range and are just under 1.4% below French costs and 5.1% below the UK costs but 4% higher than Germany and 4.2% higher than the Netherlands.

It is notable that the UK figure fell by over 7% in 2017 but this was due to a large drop in the value of sterling against the euro in mid-2016. In fact, when the figures are converted back to sterling the UK figures have increased by 2.8% year on year. Similar increases are indicated for Germany 2.9% and France 2.53%. The Netherlands is 4.4% higher than in 2016. Ireland, reflecting the recent published year on year results of the SCSl tender indices, has the highest rate of increase at 6%. This data suggests that over the last

year average Irish tender rates having been increasing at a greater rate than in the other study countries.

Examining the detail of cost breakdowns, it is noted that there are more significant cost variations within individual cost elements such as building services and project overheads. Project overheads, which includes site management, represent between 11 to 14% of overall building cost in the Netherlands, UK and Ireland but it is much lower for both France and Germany at around 4%. It should be noted that in typical German employer designed contracts <sup>20</sup> the architect/engineer charges a construction management fee as part of their services and design fees which can represent some 20% on top of the net building cost compared with say 10 to 12% for other study countries. Likewise, in France, insurance is a cost met directly by the client under associated capital costs and, therefore, excluded entirely from the contractor's overheads. This effectively moves some of the costs associated with project overheads under capital construction costs in Ireland, the UK and the Netherlands into professional fees or associated capital costs when dealing with Germany and France.

Ireland has a relatively small domestic construction market and is an island nation located at the periphery of Europe, Nevertheless, the above analysis indicates that Ireland is broadly comparable with its European peers in terms of construction costs for office buildings. However, office buildings do not necessarily reflect the specification or costs associated with residential developments and further analysis is required which is examined in the next section.

18. Sterling exchange rate for 2016 study was €1.00 = £0.79

19. Sterling exchange rate for 2017 study was €1.00 = £0.88

20. Employer designed contracts are contracts where the Employer (or client) employs the design team first to design the building and then separately engages a contractor to construct the building. There are also other forms of contract such as design and build contracts where the contractor is responsible for the design of the building.

# 08/ Analysis of cost data for residential projects

**Data on residential projects based on the ICMS reporting system was received for five countries (including Ireland) for 30 projects which included a mix of housing and apartment projects all with costs updated to Q1 2017.**

In all cases cost data was received on the capital construction cost including VAT and, in most cases, we received data on the professional design/management fees and other ancillary capital costs. Reports received from some countries, including Germany and the Netherlands, excluded the infrastructure portion of the external works and site development costs, although information sourced from Germany allowed for a reasonable estimate to be made for these costs. It was reported from the sources in Germany and the Netherlands that it was common practice in their countries for municipal authorities to buy land and to develop same for resale for housing/apartments development to housing associations or private developers. As a result of this, the cost of servicing sites with public utilities and road infrastructure associated with residential developments tended to be excluded from the cost analysis as it was absorbed as part of the site acquisition cost.

In most capital construction costs, the cost of sanitary fittings, kitchen built-in fittings and built-in wardrobes would be included in the dwelling costs but, in respect of the French reports, sanitary appliances and built-in kitchen units are excluded and, in the Netherlands, built-in wardrobes in the bedrooms are not provided.

As part of the data gathered we received seven returns with land costs from the Netherlands. Professional fee costs were also received for 14 projects with four where fees are deemed included in the preliminary costs as design and build projects. In the case of German projects, architect's fees for construction management and design have been advised and included at 20% of the net capital construction cost excluding VAT as the norm for Employer designed contracts as it is general custom for the architects to manage the trade contractors rather than engaging with main contractors. Figures for administrative, financing, legal and marketing costs were provided for 12 projects.

For the UK, the BCIS provided a report on their range of costs at Q1 2017 for residential units in their data from 2014 with sub categories for houses, apartments low rise and medium high rise (5 to 10 floors). That report also gave a Location Index<sup>21</sup> for building costs across 12 UK regions which indicates, against a base of 100, how far above or below that base the average projects costs in a region are. For example, the cost for 40 apartments in the West Midlands at base 101 would be expected to be some 17% higher if built in London with a Location Index of 118. The Location Index can be applied to the cost of a scheme in one location to give a predictive outcome for a similar project in the differing location. Similar regional differences have been established in Ireland (SCSI), Germany (BKI) and France (UNTEC). It is noted that these regional differences have been established as reasonably consistent over time and are reflective on the construction economy and overall economy of that region.

Therefore, using a national average is simply a comparison of the mean of a number or range of costs over a wide geographical area. It is the mean of the various locational costs which we need to establish a national comparator. It should not be interpreted that the mean reflects the cost in a particular location in that country but is simply an average of a large range of data assessed by a national body such as BCIS and the other national construction data collectors in other countries. However, for the purposes of comparing construction costs between countries it is the establishment of that mean which is the most prudent method to compare, eliminating the extremes engendered by particular location, specification or other variables.

From the German sources, in addition to the detailed project data, data on 14 BKI residential projects where summary cost reports under the DIN system were received together with a BKI building cost map of Germany (dated 2013). This indicates the average cost per square metre (gross external area, BGF, is the standard floor area methodology in Germany) for all the German districts and which is updated for BKI subscribers to allow updated costing in the German market. This is similar to the BCIS Location Index. BKI's recent 2017 Q1 review of average cost breakdown for low, middle and high quality residential buildings was also received.

From UNTEC (France) a cost study published in 2015 of some 38 residential development in France was received. Similar to the BCIS report, this gave a range of costs, the mean etc. for these projects, an analysis of the cost breakdown and range of costs for differing building types including residential units with lifts, differing forms of heating etc. Also, received from UNTEC was an analysis of Location Index used to provide cost estimates for projects in the 95 districts in France plus the five for Isle de France (Paris).

Each source completed their reports on the projects and provided general information on the construction market including annual rates of tender inflation.

## **Summary of cost data from each source and application to deriving a cost comparative indices**

The cost data from each source is summarised as follows:

### **United Kingdom**

BCIS (Building Cost Information Service) have provided Cost analysis from a number of residential projects updated to Q1 2017 from different regions including Northern Ireland, Scotland and the midlands together with statistical data for over 300 no. residential projects both apartments and housing together.

The BCIS report demonstrates that there is no homogeneous construction cost in the UK with a location index ranging from Northern Ireland at 60, Wales 84 and Scotland 90 to west midlands at 101 and London at 118. The BCIS information is based on over 300 no. recent projects updated to Q1 2017 is by far the most advanced in providing sufficient data to establish a fair estimate of a national mean value compared with the other countries which are the subject of this study. However, in all cases it is the establishment of a national mean which must be achieved to allow reasonable comparisons.

It is also important to note that BCIS exclude VAT and other associated capital costs such as client paid professional design fees and simply confine their data to capital construction costs without VAT. The detailed project data provided did give some indication of professional design fees applicable but for purposes

21. Location Index is the term use in this report to for regional cost comparison indices used in the UK (BCIS), Germany (BKI) and France (UNTEC).

of the final cost analysis both VAT and design fees have been excluded.

The BCIS source did advise that parking requirement for apartment projects depended on the local municipal authority policy and many locations in London parking requirements were minimal. There were no requirements imposed with respect to having separate balconies per apartments or dual aspects.

Costs provided for residential units in the UK normally include the provision of sanitary appliances, built-in kitchen units and built-in wardrobes as is the practice in Ireland.

The UK construction industry operates on similar terms to the Irish, the forms of contract though different, operate on the same basis in a similar legal system and similar procurement processes. It utilises many types of contract including Employer designed build, Contractor design and build and various management contracting forms. Materials, labour rates and means of construction are reasonably similar (concrete and brick/masonry) between the countries also. Developers generally are housing associations or private developers and sites development costs including services, roads etc. are part of their costs.

### The Netherlands

This is based on cost analysis data provided from eight different sources for 13 no. projects (mainly apartments) of which 6 no. were at estimate /pre-construction stage sourced from the same Housing Association. The information has been co-ordinated and provided by NVBK (Nederlandse Vereniging van Bouw Kostendeskundigen) which has been used to establish a range of data for the Netherlands. It is noted that external works/site development costs are almost absent from the reports and this may be due to the policy of the Dutch municipal authorities in the 1990s of buying undeveloped land and investing in same by providing services and roads and selling serviced sites to housing associations and private developers.

Neither NVBK or any other institution in the Netherlands publish national data in a similar manner to BCIS or BKI so we have only the project returns to rely to establish a reasonable mean. The NVBK source arranged for cost data samples from eight sourced cost consultants and this is not dissimilar to how the SCSi in Ireland gather data for their published house reinstatement costs.

It is noted from the analysis that the breakdown of costs provided indicate a lower portion in the Netherlands for substructures (under 5% of the Capital Construction Costs) whereas both UK and Ireland indicate between 8 to 10%. Further investigation is required, but it would suggest that the overall lower figures for the Dutch projects compared with others may be reflective of works carried out prior to development not being reflected in the reported analyses.

Dutch residential projects exclude from their cost data the provision of built-in bedroom fittings and to provide an equivalent basis for comparison additional costs for bedroom fittings have been added to the received data at similar standards and rates to those which would operate in Ireland, the UK and France.

The returns from several sources in the Netherlands included full associated capital costs including land acquisition costs.

In conclusion, when examining the construction capital costs after site variables such as substructures and external works are excluded, the data received shows reasonable consistency. The source of the data advises it should provide a reasonable estimate of mean residential costs. The data received is predominantly for apartments which it is understood is reflective of the current Dutch residential market.

The Dutch construction industry is not dissimilar to the UK in the form of contracting used but as with all mainland Europe contracts are subject to codified law rather than common law which operates in Ireland and the UK. This different legal basis tends to result in lower insurance costs.

### France

UNTEC provided statistical data in 38 residential projects analysed to June 2015 and which have been updated based on their tender indices advice to Q1 2017. An analysis of a 2017 residential project in Nantes was provided which reasonably correlates with the earlier data. UNTEC also provided a location index for costs across Frances 95 administrative districts with a range of over 20 base points from 0.82 to 1.04. UNTEC have taken the regional differences into account in preparing their overall data and results.

The data provided is in a similar format to that given for the BCIS, with a range of costs per square metre, the means and medians deciles and quartiles provided. The 38 projects examined represent 10 regions. Over 86 % are projects with lifts. There is a good mix of private and public client with 47% for the latter. 79% of the projects are concrete framed with 18% in masonry and 1 in timber framed construction. It is noted that 44% of the projects have underground parking. In relation to heating, 13% have district heating, 68% by gas, 13% by heat pump and 5% electric heating.

The UNTEC source has clarified that built-in kitchens and sanitary ware are not provided in these costs though bedroom built-in fittings are included. In order to provide an equivalent basis for comparison additional costs for kitchen units and sanitary ware have been added to the received data at similar standards and rates to those which would operate in Ireland, the UK and the Netherlands.

According to UNTEC sources, the French construction industry has been stagnant for a few years and though tender costs have risen in the last year in line with trends in the rest of Europe, there is no major resurgence in construction except in the Paris region. The insurance industry is heavily involved in construction where decennial insurance dictates the project participants including the quality and qualification of the contractors and design teams involved. As already stated the project insurances are paid directly by the client and include the Construction and Design Insurance. State provisions for employee disability etc. reduce the exposure to employer liability and similar provisions we understand would operate in the other mainland Europe countries in this study.

## Germany

Sources provided analysis of 3 no. residential projects from the BKI data sources together with the original BKI data for 14 no. residential projects in total.

The BKI current Q1 2017 document provided has been the main source for establishing a mean national cost for Germany. This data includes a range of costs also for external works, substructures and built-in fittings including sanitary ware and wardrobe units.

There are considerable variations across the country as demonstrated by BKI's regional map which indicates a location index for each local district and a range from 0.869 in Dusseldorf to 1.353 in Munich. Not unlike the UK there are significant internal differences in construction costs between the various municipal regions. This regional data is updated on a regular basis to provide up to date cost comparisons for similar projects between those districts.

In Germany contracting is usually either design and build by main contractors or employer/client designed with architects engaged with a management fee to engage a contracts manager to manage the various trade contractors. Therefore, costs in relation to what would be termed contractor preliminaries in Ireland or the UK are low as the construction management cost is contained in the architect's fee which can be in the region of 20% of the net construction cost.

It should also be noted that, unlike the other countries in this study, Germans quote cost per square meter based in the BFG gross external area (measured to the outside of the external face of the building IPMS 1 under the new International Property Measurement Standards). So, when comparing quoted costs per square metre with those quoted from other countries the rate per square metre needs to be converted to similar internal gross floor areas. Our source used a conversion factor to provide IPMS 2 gross internal floor areas for the projects examined.

## Ireland

Unlike the UK or Germany there are no established institutions responsible for collecting construction data and publishing it. Details for seven recent residential projects in or around Dublin and the east of the country were examined. This included 4 no. apartment and 3 no. housing projects which have been tendered and analysed within the last 2 years (including a project with tenders received in June 2017). In arriving at a national mean, we have used the mean for these projects based in or around Dublin to establish a mean for the Dublin region and then applied a location factor to establish a national mean.

The basis used to establish the national mean for Ireland was to use an analysis of published data over 7 years provided by the SCSi for house rebuilding costs in seven regions in Ireland. An analysis of that data indicates a consistent average regional costing differential across Ireland from Dublin at base 100 down to 68/69 for the North West and Border counties. In order to correlate the SCSi regional costs to actual regional output, CSO statistics for planning permissions for residential developments in Q1 2017 based on total floor areas for planning regions were used and, applied as a weighting factor to the SCSi regional cost data to arrive at a national mean. This resulted in a mean location index being calculated as 87 and applied to the Project Data mean to establish the national mean for Ireland.

As already noted Ireland and the UK have a lot in common in respect to the way our respective construction industries operate including the residential sector.

It should be noted that the Society of Chartered Surveyor's Ireland has published a construction market based tender price index for non-residential buildings since 1998. It is generally relied on in Ireland as a national trend in movement of tender prices in construction including residential notwithstanding that residential project data is excluded from the data on which it is based. Similar indices are published by BCIS in the UK and BKI in Germany. In preparing this study the SCSi tender indices have been used to update Irish residential project data in combination with the published CSO data relating to construction.

# 09/ Comparative index

**Comparative indices have been compiled based on combined housing and apartment scheme data gathered for the study countries. As set out in Section 8 some adjustments have been applied to some of the data in order to create a comparable dataset. The specific exclusion are discussed in more detail below. In addition, to establish national indices, location index adjustments have been applied to balance data gathered on projects in particular locations to account for regional market price variations. The results are set out below.**

**Table 6: Index of Residential Construction Cost**

Country	Residential Cost Index
UK	101.0
<b>Ireland</b>	<b>100.0</b>
France	98.7
Germany	97.1
Netherlands	82.0

It can be seen from this table and the comparative *Table 7* below that, apart from the Netherlands, the pattern of cost distribution is similar to the results of the CEEC office cost model but with an expanded cost range from 9.3 points to 19.2 points.

It is suggested that further study would be required of the Dutch figures as the results of the CEEC model would suggest that Dutch construction costs should be closer to their larger neighbour Germany as can be seen from the close correlation between the construction costs for Ireland and our larger neighbour the UK. It is suggested that smaller countries construction costs are to a degree heavily influenced by their larger neighbouring construction economies and Germany, France and the UK, along with Spain, are the European countries with the largest construction industries in Europe.

With reference to the Eurostat data in Section 6.0 it was clear that the data for the UK was increasing at a greater rate than the others (116.9 v 110.5 (Germany) *see Table 2*) and it would be contended that Ireland's construction sector cannot escape the influence of its larger neighbour's construction sector.

**Table 7: Comparison of Index for Residential Construction Cost and CEEC Office Cost Model per Q1 2017**

Country	Residential Cost Index	CEEC Office Cost Model
UK	101.2	105.1
<b>Ireland</b>	<b>100.0</b>	<b>100.0</b>
France	98.7	101.4
Germany	97.1	96.0
Netherlands	82.0	95.8

Exclusions: the following cost items have been excluded from the data in order to establish a fair basis for comparison between residential construction costs in so far as possible:

- Site cost
- Professional design fees
- Local authority levies
- Finance costs and risk margin for a private developer
- Sales, marketing and legal costs
- VAT
- External and site development works
- Substructures including basements

The exclusion of external and site development works has been done, in part to factor out cost differences between Dutch and German residential projects and those in the other countries in this study. In these two countries these costs are frequently built into site acquisition costs, whereas in the other three countries external and site development costs are incurred separately to site acquisition costs. It must also be acknowledged that the extent and scope of work varies considerably from project to project even within countries and is dependent on the extent of the site to be developed in relation to the building foot print. In preparing this report we have taken the view that including external and development works would distort the ability to compare the real construction costs.

In a similar fashion, we exclude substructure from our study. The reason for this exclusion is that basement costs including basement car parking are contained in the substructure costs. Depending on whether projects include basement development or not will seriously distort the cost per square metre for this element. To establish a fair comparison, it would be better to compare projects only with basements or projects which excluded basements. Given that for some countries we only have limited project data to rely on, has been is deemed more prudent to exclude the substructure costs and compare solely to costs of providing the structure above ground.

It is to be noted that in the CEEC office cost model (see Section 7.0) that both the external works and substructure scopes were the same and therefore the underlying scope/ specifications were not subject of a wide variation. That is not be the case for the data examined under this residential construction study and hence the decision to exclude it from the calculation of the final indices.





## Conclusions

1. This study has identified that Irish residential construction costs are generally comparable with those in Germany, France and the United Kingdom but above those in the Netherlands.
2. In gathering data for the study, it was noted that there are significant regional differences within countries which can exceed the level of cost differences between countries due to local market issues.
3. This study has endeavoured to compare residential construction costs on a like for like basis between countries. However, there are inherent difficulties in achieving this given national and regional differences between countries, industries and markets<sup>22</sup>. These differences include different approaches to undertaking residential development; different arrangements between the client, design teams and contractors; differences in control and ownership of land between local government and the private sector; the level of intervention of local government in controlling development and providing infrastructure; and the relative levels of residential development undertaken by not-for-profit organisations such as housing associations or municipal housing companies. The findings of this report should be viewed in this context.

22. The CEEC is working to introduce a standard apartment block design which would be priced by their members in the same way as they currently price the standard office block. This would be very beneficial for any future residential construction cost study.

# Appendix A

## ICMS Standard explained

### ICMS as a basis for gathering data

The ICMS standard gives a common format for cost breakdown, descriptor, common definition of what is included in floor area square metre calculations and a common set of project attributes/values to be given for each project.

For the purposes of this study the ICMS coalition gave permission for the final consultation draft ICMS to be used in advance of publication in July 2017 and whilst there are some differences between the version used for the study and the final version they have no significant impact on the outcome. The following explanation refers to the consultative draft only.

It is accepted that cost reports usually are limited to capital construction costs and ICMS seeks to ensure reporting also of the associated costs. Both sets of cost are essential.

For the purposes of gathering data we asked the contributors to identify whether the finance costs under 2.5 includes or excludes finance in respect to the land costs.

Set out hereunder is the elemental format for the cost reporting breakdown under the ICMS format for gathering construction cost data for buildings.

Costs are reported as a total capital cost combining what we would term Hard costs – (Capital construction costs) and Soft Costs (Associated Capital Costs).

It will be appreciated that in some countries depending on the types of construction management used the latter costs might be higher since a supervisory architect /engineer may be engaged to manage the project and paid direct by the client where several contractors are engaged and that cost may be reflected in the ancillary costs to the client rather than a direct construction cost.

Where the original data was in a format that made it difficult to allocate costs between the cost groups contributors were asked to make an estimate of the proportion that they would allocated to each cost group and note how they have allocated same.

Item	Description
<b>1. Capital Construction Cost</b>	
1.1	<p><b>Demolition and site preparation</b></p> <p>Scope: All necessary advance or facilitating work to prepare and secure the site prior to starting permanent work, excluding site formation for buildings (which should be included in external and ancillary works).</p>
1.2	<p><b>Substructure</b></p> <p>Scope: All the load-bearing work underground or underwater up to and including the following, including related earthwork and lateral support beyond site formation:</p> <ul style="list-style-type: none"> <li>■ for buildings: lowest floor slabs, and basement sides and bottom including related waterproofing and insulation</li> </ul>
1.3	<p><b>Structure</b></p> <p>Scope: All the load-bearing work <i>including non-load bearing components forming an integral part of composite loadbearing work</i>, excluding that included in Substructure and Architectural work.</p>
1.4	<p><b>Architectural works   Non-structural works</b></p> <p>Scope: All architectural and non-load-bearing work excluding services, equipment and underground drainage.</p>
1.5	<p><b>Services and equipment</b></p> <p>Scope: All fixed services and equipment required to put the completed project into use, whether they are mechanical, hydraulic, plumbing, fire-fighting, transport, communication, security, electrical or electronic, excluding underground drainage.</p>
1.6	<p><b>Underground drainage</b></p> <p>Scope: All <i>external surface and underground drainage systems</i> specifically serving the Project.</p>
1.7	<p><b>External and ancillary works</b></p> <p>Scope: All work outside the external face of buildings or beyond the construction required to fulfil the primary function of the assets, Project and not and not included in other cost groups.</p>
1.8	<p><b>Preliminaries   Constructor's site overheads  general requirements</b></p> <p>Scope: Constructor's site management, temporary site facilities, site services, and expenses, not directly related to a particular Cost Group, but commonly required to be shared by all Cost Groups.</p>
1.9	<p><b>Capital Costs Risk Allowances</b></p> <p>Scope: Allowances for factors that are uncertain and have not been included in the other Cost Groups in this Cost Category.</p>
1.10	<p><b>Taxes, Levies and Grants</b></p>

## 2. Associated Capital Costs

2.1	<p><b>Site acquisition</b></p> <p>Scope: All payments required to acquire the site, excluding physical construction.</p> <ul style="list-style-type: none"> <li>■ Costs or premiums required to procure land or existing properties;</li> <li>■ Compensation to existing occupiers</li> <li>■ Transaction and legal fees</li> </ul>
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Item	Description
2.2	<p><b>Construction-related consultants and supervision</b></p> <p>Scope: Fees and charges payable to Service Providers not engaged by the Constructors.</p> <ul style="list-style-type: none"> <li>■ Architects, engineers, project managers, surveyor's fees</li> <li>■ Statutory planning and design submission charges</li> <li>■ Site Supervision charges</li> </ul> <p>Expert reports including archaeologists, soil investigations, environmental etc.</p>
2.3	<p><b>Work and utilities outside site</b></p> <p>Scope: All payments to government authorities or public utility companies to connect public work and utilities to the site, or services diversions, to enable the Project.</p> <ul style="list-style-type: none"> <li>■ Services and Utilities -connections to, diversions of and capacity enhancement of public utility mains or sources outside site up to mains connection (on site)</li> <li>■ Authority fees and related levies</li> </ul>
2.4	<p><b>Loose furniture, fittings and equipment</b></p> <p>Scope: Provided for the building or asset to perform its function close to or after completion.</p>
2.5	<p><b>Administrative, finance, legal and marketing expenses</b></p> <p>Scope: All other expenses that may be incurred to support or enable the Project.</p> <ul style="list-style-type: none"> <li>■ Client general office overheads including offices, staff, insurance, rent etc.</li> <li>■ Client project specific administrative expenses</li> <li>■ Client's working capital</li> <li>■ Client's Finance Cost</li> <li>■ Client's Legal and accounting expenses</li> <li>■ Sales including associated legal expense</li> <li>■ Taxes and statutory charges related to sales or lease</li> <li>■ Marketing, advertising and promotional expenses</li> <li>■ Licence and permit for operation</li> <li>■ Related taxes and levies</li> </ul>
2.6	<p><b>Associated Capital Costs Risk Allowances</b></p> <p>Scope: Allowances for factors that are uncertain and have not been included in the other Cost Groups in this Cost Category.</p>

Measurement areas shall be based on the following ICMS rules. Note they are based on the IPMS (International Property Measurement Standard) for residential buildings which can be found on their web site. For convenience, a summary of the measurement rules are set out over leaf and these are what is required for ICMS.

## Measurement of Gross Floor Areas for Buildings for ICMS Cost Reports

The various cost analysis standards worldwide require the measurement of a gross floor area (either external (GEFA) or internal (GIFA)) or similar variations thereof to permit the representation of overall costs in terms of currency per square metre. However even though the use of these terms is universally understood, the definitions and interpretations of these terms are also subject to considerable regional variation.

Measurement guidelines and definitions vary considerably between countries. Linking ICMS with IPMS provides a valuable tool for overcoming these inconsistencies. ICMS requires a cost report to include both GEFA (IPMS 1) and GIFA (IPMS 2) measured in accordance with the rules set out in IPMS. IPMS are evolving on a building-sector basis (offices, residential, retail and the like) and, although IPMS 1 will be consistent for all building types, IPMS 2 will therefore vary between different building types to take in to account specific building characteristics though the definitions and principles will remain the same. These rules are summarised below, but reference to the specific standard, for the particular building type, is recommended.

### IPMS 1: Gross External Floor Area

#### Use

IPMS 1 is used for measuring the area of a building including external walls.

#### Definition

IPMS 1 is the sum of the areas of each floor of a building measured to the outer perimeter of external construction features, which may be reported on a component-by-component basis for each floor of a building. The definition is the same for all classes of building.

#### Inclusions

IPMS 1 includes all areas and walls, 'columns and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest floor level' (*IPMS: Office buildings, 3.2.2 and IPMS Residential Buildings 3.1.2*).

In the absence of external construction features, for example, an open-sided building or a free-standing canopy, IPMS 1 is to be measured to the covered area. The 'area of basement levels is calculated by extending the exterior plane of the perimeter walls at ground level downwards, or by estimation of the wall thickness if the extent of the basement differs from the footprint of the Building' (*IPMS: Residential buildings, 3.1.2*).

#### Measurements included but stated separately.

Balconies, covered galleries, internal catwalks, sheltered areas, internal permanent mezzanines and generally accessible rooftop terraces are included. They are to be measured to the outer face and their areas stated separately. (*IPMS: Residential buildings, 3.1.2*).

#### Exclusions

'Measurement for IPMS 1 is not to include the area of:

- temporary mezzanines
- open light wells or the upper level voids of an atrium
- open external stairways that are not an integral part of the structure, for example, an open framework fire escape' (*IPMS: Office buildings, 3.1.2*)
- external areas such as external vehicle parking, external catwalks, vehicle circulation and other areas or structures (such as equipment yards, cooling equipment, refuse areas), and patios and decks at ground level.

Measurement for IPMS 1 excludes any other ground-level areas or structures beyond the covered area. Such areas may be measured and stated separately. (*IPMS: Residential buildings, 3.1.2*).

## IPMS 2: Gross Internal Floor Area

### Use

IPMS 2 is used for measuring the interior area of a building.

### Definition

IPMS 2 is the sum of the area of each floor of a building measured to the internal dominant face (IDF), which may be reported on a component-by-component basis for each floor of a building. For the purposes of ICMS, the definition is the same for all classes of building.

### Inclusions

IPMS 2 includes all areas within the IDF, 'including internal walls, columns and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest floor level' (*IPMS: Office buildings and IPMS Residential Buildings 3.2.2*).

Measurements for the following areas are to be measured and stated separately. For the purposes of ICMS they are not included in the Gross Internal Floor Area.

Balconies, internal catwalks, covered galleries, internal loading bays, internal permanent mezzanines, verandas and generally accessible rooftop terraces are included. They are to be measured to their Finished Surface face and their areas stated separately. (*IPMS: Residential buildings, 3.2.2*).

### Exclusions

Measurement for IPMS 2 is not to include any ground level areas or structures beyond the external wall such as Sheltered Areas, External Catwalks and external Loading Bays, temporary mezzanines or open light wells and the upper-level voids of an atrium. Such areas may be measured and stated separately. (*IPMS: Residential buildings, 3.2.2*).

# Appendix B

## CEEC office cost model document

CEEC Code of Measurement for Cost Planning /  
 CEEC Code de planification financiere dela construction /  
 CEEC Code für die Kostenplanung

Cost Groups	Ireland	UK	Germany	Switzerland	Netherlands	France
<b>Construction Costs 2017</b>						
A. Preliminaries	<b>171.15</b>	194.26	62.18	193.74	197.36	55.83
B. Substructures	<b>33.91</b>	31.91	45.88	94.13	41.24	74.10
C. External superstructure / envelope	<b>466.18</b>	532.36	577.14	598.72	368.89	619.18
D. Internal superstructure	<b>141.03</b>	120.02	165.11	229.86	174.17	213.16
E. Internal finishings	<b>143.46</b>	127.67	192.03	222.19	257.07	223.31
F. Service installations	<b>420.62</b>	443.01	278.97	483.79	306.09	222.30
G. Special equipment	<b>22.77</b>	30.00	0.00	31.74	22.92	14.21
H. Furniture and fittings	<b>46.14</b>	42.89	46.34	32.84	31.42	30.45
I. Site and external works	<b>59.20</b>	59.66	76.15	101.79	42.16	73.08
J. Construction contingencies	<b>45.13</b>	47.45	43.31	59.66	43.24	45.77
K. Taxes on construction	<b>0.00</b>	0.00	0.00	0.00	0.00	0.00
<b>Total construction costs 2017</b>	<b>1,549.59</b>	<b>1,629.23</b>	<b>1,487.11</b>	<b>2,048.46</b>	<b>1,484.56</b>	<b>1,571.39</b>
	<i>100%</i>	<i>105%</i>	<i>96%</i>	<i>132%</i>	<i>96%</i>	<i>101%</i>

# Appendix C

## Parameters for residential cost data

### Documents used and parameters set to obtain construction cost information from European sources

In respect to housing projects the following parameters were set:

#### Residential project type 1: Housing

- projects commencing or completed since Q1 2015
- 20 or more housing units though projects with less will be considered
- preferably two storey with an internal gross floor area of between 90 to 130 square metres with 3 bedrooms
- External works and site development costs
- normal construction materials for the region with an energy rating A3 per Irish Building Energy rating or equivalent.
- Any furniture including built-in
- VAT
- Professional fees including VAT
- Works outside the site including service connection charges
- Marketing, sales administration and finance charges

#### Residential project type 2: Apartments

- Projects commencing or complete Q1 2015
- 40 or more individual units with between 50 to 100 square metre internal gross floor area per apartment excluding common areas though projects with less or more will be considered
- with 1 or 2 bedrooms using normal construction materials for the region with an energy rating A3 per Irish Building Energy rating \*.
- Lifts and common stairways provided in all cases.
- Services and finishing out apartments similar to housing but floor finishes may be included.
- External works and site development costs
- Any furniture including built-in
- VAT
- Professional fees including VAT
- Works outside the site including service connection charges
- Marketing, sales administration and finance charges

\*An A3 BER for a 3-bed room house 100 square metre internal floor area this equates to indicative annual CO2 emissions of 1.4 tonnes



## Further information sought for residential project type 2;

Minimum requirements/guidelines set by government authorities for the provision of apartments.

SCSI research has established that construction costs of apartment developments are heavily influenced by location and the location and extent of parking requirements. They have established that of the projects they have examined they fall into three categories which differ significantly in costs. Respondents were to establish into which category their project applies.

### Category 1

Small suburban apartment blocks with on -street parking or parking at ground level with maximum 4 storey with a façade /window specification similar to housing.

### Category 2 A

Suburban apartment blocks up to 6 storeys or more with undercroft parking.

### Category 2 B

Suburban apartment blocks up to 6 storeys or more with basement parking

### Category 3

Town Centre apartment block with basement car parking up to 6 storeys or more.

### Category 4

Any of the above categories in combination with a commercial development such as a retail or office development. A project may come under both category 4 and one of the other categories.

For both types of project further information to be provided based on ICMS values and attributes data sheet. The following also to be provided:

- A brief outline of the project specification for each project is required, enough to define the main material elements, a site plan or area and if available typical floor plans and photographs of the houses/apartments

- Where both housing and apartments are involved in the same project, if it possible separate the information for the houses and apartments into separate projects for the purpose of providing the data.

- The names of clients and contractors for the projects can be excluded from the reports.

## ICMS forms – cost categories/ cost group breakdown for housing project and apartment project – attributes and value forms common to each project

The following notes issued to contributors making the returns

### Note for completing the forms in excel format.

1. There is a separate cost category cost group breakdown for the housing projects and the apartment projects. A more detailed definition of the cost groups is set out in appendix B.
2. In completing the cost breakdown item 2.1 site acquisition can be excluded but please where possible complete all the other cost groups.
3. With respect to cost breakdown information from a completed project the risk allowance under 1.09 and 2.6 will not be relevant and can be left blank.
4. In addition for each project there is a 3 page Attributes and Values form which should be completed. It contains essential information about the project. The first part ref numbers 01 to 623 is common information applicable to all construction projects. The second part ref numbers 07 to 094 is the specific information required for Buildings.
5. For the purposes of the Housing Agency project additional information regarding your national industry have been requested at ref numbers 10 to 109.
6. On page 3 further information in respect to your housing or apartment project are set out under questions 11 and 12.

## Notes

